

of *H. Tunbridgense*. In the perfect specimens from Mr. Clowes the cells are generally polygonal, often hexangular, whereas they are frequently quite round or oval in my more stunted plants. This variation is such as might be expected from the more or less distention of the cells, as the round and oval forms are well known to become angular from mutual pressure in luxuriant growth.

And now, from an examination of the tissue-cells of the involucre of these plants, it results that in them also there is a difference of size, similar to that in the leaf-cells. After repeated comparisons of the involucre-cells of the two plants, it was found that these cells are regularly the largest in *H. Wilsoni*, and that the two species could be easily distinguished by this character alone, as may be seen in figures 1 & 2.

The spores also were larger in these plants of *H. Wilsoni* than in *H. Tunbridgense*. But as the spores were mostly misshapen, though some of them seemed perfect, they should be carefully compared in fresh and mature plants before we conclude that this difference of size is regular and constant. Figures 3 & 4 will show the comparative sizes as I saw them in the plants from Mr. Clowes.

Probably sufficient evidence has now been adduced to show that the cells both of the involucre and leaves may be available as specific characters in Hymenophyllaceæ. In *Trichomanes radicans* the leaf-cells are nearly like those of *Hymenophyllum Wilsoni*, and consequently larger than those of *H. Tunbridgense*.

Edenbridge, Sept. 17, 1863.

#### BIBLIOGRAPHICAL NOTICES.

*The Angler-Naturalist: a Popular History of British Freshwater Fish; with a plain Explanation of the Rudiments of Ichthyology.*

By H. CHOLMONDELEY PENNELL. London: Van Voorst. 1863. 12mo.

WHEN old Izaak Walton published his 'Complete Angler,' it was his endeavour to bring together all the scientific knowledge of his time connected with Fish and fishing; and, absurd as many of his tales appear to us, they were undoubtedly vouched for in his day by naturalists of high authority. But even these erroneous statements have often a charm, partly from the quaintness with which they are related, and partly from the perfect good faith with which they are woven into the narrative; and Walton's book was certainly, at the time of its publication, a mine of information upon natural history, in the angling point of view, such as has never since been equalled. Indeed in most of our angling-books the descriptions of the habits of Fish are borrowed more or less directly from Walton; and some

of those authors who have endeavoured to write with more originality have been misled, by the continued popularity of Walton's charming work, into attempting an imitation of it, though generally destitute either of the imagination, poetic and literary power, or talent for the observation of nature, the combination of which enabled the old hosier of Fleet Street to produce his prose-pastoral. In the 'Salmonia' of the great Sir Humphry, to choose one of the highest examples, the conversation resembles that of a set of priggish pretenders to learning, talking to show off the greatness of their attainments; and the sporting dialogues of some other writers are offensive in a different way. Under these circumstances, it was no small gratification to us to find, on opening Mr. Pennell's little book, of which the title stands at the head of this article, that, although a sportsman, he had avoided making his work a conversation-piece, and been content to tell "a plain unvarnished tale."

Mr. Pennell appears to have been induced to undertake the preparation of his book by the perception of the general ignorance on all ichthyological matters pervading the generality of anglers, and by the desire to indicate to them the greatly increased gratification that will accrue to them from the practice of their art by learning to understand a little of the life-history of the objects of their pursuit, and thus qualifying themselves for the observation of many phenomena which would otherwise take place before their eyes unnoticed. With this view he has commenced with a general outline of the structure and physiology of Fish, which is written in a clear and plain manner, and, notwithstanding one or two little defects, will undoubtedly furnish the reader with a very good notion of the mode in which life is carried on in the denizens of our waters.

In the second part of the work, which treats of the natural history of our Freshwater Fishes, Mr. Pennell has adopted the Cuvierian classification, which is no doubt the best course he could have taken in order to render his subject readily intelligible to those for whose use the book is specially intended. In order to enable the readers to determine the species of fish which may come in their way (a branch of knowledge in which many anglers even are woefully deficient), careful descriptions are given of all the known species, which amount, according to the author's enumeration, to fifty-three. He has, however, omitted all notice of the Smelt and the Flounder, which nevertheless may fairly be reckoned among river-fish, the latter especially being often met with far above the influence of the tide. The most important sections of this part of the work are those treating of the Pike and the numerous species of Salmonidæ, the difficult natural history of the Salmon especially being admirably described. Of the Charrs, Mr. Pennell, following Dr. Günther, makes three species; but of this group, as also of that of the true Trouts, it seems probable that further researches will prove the existence in our waters of a larger number of species than is now known; and Mr. Pennell's book will do much to call the attention of anglers and others who may have the opportunity of investigating the productions of our rivers to this important point in British ichthyology. Indeed, as a

manual of our Freshwater Fishes, this little work will be welcome to many a naturalist who may be desirous of working upon this branch of zoology.

It seems to us, however, to be rather a defect in the book, that it is too exclusively zoological. The infusion of a little more angling information into it would have rendered it a far better angler's handbook than any that we possess; and this information might easily have been given in the space which is at present occupied by considerable digressions, such as that at pp. 223-232, in which numerous examples of fishes making terrestrial excursions are detailed. In one of these little digressions, which happens to be peculiarly *à propos de bottes*, the author falls into a curious muddle, describing the *Pinna* under the name of "Nacre," as the source of mother-of-pearl, and giving Oppian's account of the relation between the Mollusk and the *Pinnotheres*. It would, however, be an invidious task to point out the two or three little errors of this description which have crept into a book otherwise excellent, and which we can highly recommend to all who are desirous of investigating the fishes of our fresh waters; and in taking leave of Mr. Pennell, we can only hope that we may speedily see a second edition of his book, containing some additional species, to the discovery of which it may have contributed.

*Introduction to Zoology; for the Use of Schools.* By ROBERT PATTERSON, F.R.S. Twenty-eighth Thousand. Belfast: Simms & M'Intyre. London: Longmans & Simpkins. 1863. 12mo.

Mr. Patterson's 'Zoology for Schools' has been too long and favourably known to need much notice at our hands. We are glad to see that it has attained so large a circulation, as, from the character of the information contained in it, and the clearness and attractiveness of its style, it cannot fail to communicate to the young readers for whose benefit it is intended sound views of the general subject of zoology.

In the present edition, we find that Mr. Patterson has introduced many changes rendered necessary by the recent progress of zoological science. Amongst these we may mention especially the adoption of the subkingdom Protozoa, the transfer of the Polyzoa to the Mollusca, and of the Entozoa and Rotifera to the Annulose series, and the separation of the Batrachia from the Reptiles as a distinct class. Mr. Patterson still retains the subkingdom Radiata, although indicating the existence of the great group of Cœlenterata; it seems to us that he would have done better to have adopted the latter division, with its subdivisions, as giving a far clearer insight into the somewhat difficult subject of the diversity of generations in the Hydrozoa. This, however, is a small matter; and in other respects this little book is deserving of the highest praise, the author having succeeded in giving a remarkably uniform picture of the whole animal kingdom, well illustrated by references to examples, and enlivened by a number of interesting anecdotes told in a lively manner.